

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-8. (Canceled)

9. (New) In a gas supply apparatus for a polymer electrolyte fuel cell system comprising an inlet pipe through which reactant gases are supplied from a reactant gas reservoir, a reactant gas flux regulator for adjusting a flow rate of supplied reactant gases, a reactant gas supply pipe for supplying humidified reactant gases to a fuel cell, a pressure regulator for adjusting pressure of reactant gases inside the fuel cell, a coolant regulator for cooling the fuel cell, a fuel cell temperature regulator for adjusting temperature of the fuel cell, and a humidifier for humidifying the reactant gases for a polymer electrolyte fuel cell system, said humidifier comprising:

a humidification vessel to which are connected a reactant gas inlet pipe for supplying reactant gas thereto, a water inlet pipe for supplying water thereto, and a reactant gas supply pipe for supplying the humidified reactant gases to the fuel cell; and

a sprayer, within the humidification vessel, for spraying the reactant gases and water supplied to the humidification vessel within the vessel.

10. (New) The humidifier according to claim 9, wherein the humidification vessel is provided with a double passage, where a coolant heated by the fuel cell flows in one passage, in order to preheat the reactant gases, flowing in another passage, introduced into the reactant gas inlet pipe.

11. (New) The humidifier according to claim 9, wherein the humidification vessel is provided with a double passage, where hot coolant heated by the fuel cell flows in one passage, in order to preheat the water, flowing in another passage, introduced into the water inlet pipe.

12. (New) The humidifier according to claim 9, wherein the humidification vessel includes a double passage, where hot coolant heated by the fuel cell flows in one passage, which heats the humidified reactant gases, flowing in another passage, after spraying thereof by the sprayer.

13. (New) The humidifier according to claim 9, wherein the reactant gas supply pipe is a dual passage allowing the coolant heated by the fuel cell to flow through an exterior passage thereof to maintain temperature and pressure of the humidified reactant gases, flowing in another passage, to be uniform.